

*Best Wishes
for a
Happy New Year
from the
Division of
Aeronautics*



**DIVISION
OF
AERONAUTICS**

Volume 23 — No. 11

December, 1972

**ATTENTION FBOs
CHARTER PILOTS**

By **JERRY BURROWS**
Supervisor
Plant and Equipment

The new Federal Aviation Administration Airport Security requirements have caused the airport managers of air carrier airports to hire additional security guards, install new fencing, lock gates or provide other security measures in order to keep unauthorized persons and vehicles off the air operations areas and especially those areas used by the airlines. These requirements have been met on different airports by different means—elaborate electronic surveillance systems; full time security guards; or, locking the gates between flights.

Charter flights expecting to enplane or deplane passengers in front of the terminal building may run into problems. Gates may be locked, the security guard, who in most cases is new and following the book, will not allow your aircraft in that area, and if an airline aircraft is on the ramp you probably will not be allowed in that area at all.

However, it is not as bad as it appears. A little foresight and prior planning will solve most problems. The following are some suggestions which can alleviate such problems:

1. Call the airport manager involved. He will arrange to have the gates unlocked during the time requested. Or, a security man will be available for this purpose. However, if an airline is on the ground you may be required to park a distance away.
2. Make arrangements with your passengers to meet you at one of the

Fixed Base Operators. This is probably the best solution.

3. The flight service station can also assist you in a suitable location for enplaning and deplaning passengers. They will notify the airport manager if you were unable to reach him.

1973 REGISTRATION

1972 **1973** 1974 1975 1976

Pilot Registration — Montana Aeronautics Commission

Box 1698

Helena, Montana 59601

Phone 449-2506

Name _____ No. _____
(Please Print) Last Initial First (Leave Blank)

Mailing Address _____ Phone Bus. _____
Phone Res. _____

City _____ County _____ State _____ ZIP _____
FAA Certificate No. _____ Total Hours _____ Est. Hrs. _____
Last 12 Mo. _____

LICENSE RATING & ACTIVITY

Student _____ (Check)
Private _____
Commercial _____
Airline Transport _____
Instrument _____

Flight Instructor _____ (Check)
Active Flight Instructor _____
Private Business and Pleasure _____
Employed Commercial Aviation _____

Registration Fee \$1.00 per year.

Check ☐ Cash ☐

OVER I affirm on oath that the foregoing is true and correct.

Signature _____

Date _____

\$.50 of annual registration fee is for subscription to monthly publication "MONTANA AND THE SKY."

Commission Regulation March 10, 1954, reference Revised Codes of Montana, 1947, Title 1, Chapter 3, Section 1301.

Less than half of Montana's Pilots and Aircraft Owners have registered with the Division of Aeronautics for 1973. The Division would like to urge all Montana Pilots and Aircraft Owners to please hurry and register.

**DEPARTMENT OF
INTERGOVERNMENTAL
RELATIONS**

Forrest H. Anderson, Governor
Martin T. Mangan, Act. Director
Official Monthly Publication
City/County Airport
of the

DIVISION OF AERONAUTICS
Phone 449-2506
Box 1698

Helena, Montana 59601

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**FEDERAL AVIATION
ADMINISTRATION
ITINERARY LISTINGS**

Airport	Jan.	Feb.
Bozeman	24	21
Butte		
Culbertson		7
Glasgow	10	
Glendive	25	
Great Falls	10	7
Havre		
Kalispell		
Lewistown		21
Miles City	24	
Missoula	17	14
Sidney		8

NOTE: Provisions have been made to give private, commercial and flight examinations **ON AN APPOINTMENT BASIS ONLY** at the following FAA Flight Service Stations.

Bozeman Livingston
Butte Lewistown
Cut Bank Miles City
Dillon Missoula
Great Falls

NOTE: GADO #1 in Billings will no longer be open on Saturdays.

*Administrator's
Column*



By the time this issue reaches you we will be in another legislative session. Measures of interest to the aviation community include aircraft tax, aircraft registration, and pilot registration. There will be a bill presented to the legislature providing present aircraft property tax on privately owned general aviation aircraft be used for airport construction rather than going to the county general fund as it does now. If this bill is successful in its present form, there will be a change in the present \$1 registration fee. The fee will be abolished.

The present pilot registration fee of \$1 may also have to be reviewed in light of the greater cost of administration than the revenue produced by the present statutory limitation of one dollar.

Other aviation matters will no doubt be considered by the legislature including the controversial boarding fee. We will just have to wait and see what the others are.

CONGRATULATIONS



**FAA CERTIFICATES
ISSUED RECENTLY TO
MONTANA PILOTS**

PRIVATE

UWE Wottawah—Juegesheim, West Germany
Gary Brooke—Livingston
Gerald Stewart—Miles City

James Boulware—Miles City
Douglas Campbell—Lewistown
Charles Vandervoorde—Gilliam, Manitoba
Joseph Cousineau—Winnipeg, Manitoba
Owen Eaton—Tisdale, Saskatchewan
Michael Goffena—Roundup
Craig Johnson—Great Falls
Ray Tocci—Three Forks
Larry Bragg—Butte
Edward Houser—Billings
Charles Spicher—Hingham
Walter Pickering—Paradise
Loren Solberg—Kalispell
Ken Staninger—Missoula
John Philipsborn—Helena
Larry Smith—Whitefish
Harold Johnson—Missoula
James Coow—Great Falls
Loren Colberg—Kalispell
Joseph Frenzberger—Missoula

COMMERCIAL

William Mayo, Jr.—Reed Point
Douglas Gilger II—Boyes
James Gibson—Gillette, Wyoming (MEL)
Patrick Sanders—Sandy, Utah (MEL)
John Palmquist—Great Falls (SES)
Gary Coleman—Missoula (AMEL)
Wilfred Miller—Whitefish
Raymond Kinney—Missoula
Richard Allison—Missoula
Harry Scott—Bynum (ASMEL)

ATP

Ernest Lingren—Lakewood, Colorado

TYPE RATING

B-26

Gary Waltermann—Columbus
F. W. Lueneburg—Ballantine

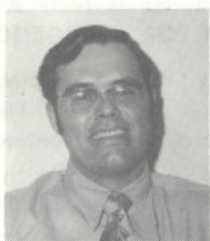
BASIC GROUND INSTRUCTOR

Lawrence Drake—Billings

FLIGHT INSTRUCTOR

Lawrence Drake—Billings (Airplane)
Walter Huffman—Big Timber (Instrument)
Thomas Thompson—Beach, North Dakota (Airplane)
James Lott—Missoula (Airplane)
Raymond Bonnell—Seeley Lake (Glider)
Michael Stockhill—Kalispell (Airplane)

NAV-AIDS



By **DAVID C. KNEEDLER**
Nav-Aids Chief

This article could be entitled "Propaganda, Progress and Plans" because it is offered with the hope that we can hold your interest long enough to bring you up-to-date on what we in the Nav-Aids Bureau have been doing, hope to in the future, etc.

The work accomplished in the past year or so in the Nav-Aids field has not been as noticeable in terms of new facilities established as was the case in the period prior to that time. Because of a pressing need to upgrade both plant and equipment facilities at some of our existing H-Marker stations, the Polson "H" commissioned in 1971 was the last new facility installed in the state.

You may recall that gradually during the past several years the Division of Aeronautics acquired all H-Marker stations operated in Montana by Frontier Airlines. The plant facilities and electronic equipment at each of these five stations was very old and they were only acquired in the interest of making them available for use by all Montana and transient pilots. After operating them for several years essentially "as purchased", we were finally forced to make major and costly improvements at several of these stations.

New transmitters (\$3,100 a copy) were purchased this summer for the H-Markers at Glendive and Hamilton; a new building installed at the Wolf Point H-Marker; and various other less costly improvements at Sidney and again at Wolf Point. In addition, the necessary steps were taken to establish public-use instrument approaches on the H-Markers at Sidney, Wolf Point and Glendive.

In the area of unicom, relocations

were accomplished at Browning and Sidney which we believe will provide for more efficient and available use of these transscievers. We want to talk more about unicom later on in this article, so don't stop reading.

Plans for the future—we are currently working on an H-Marker facility to serve the Conrad area which we hope to have commissioned by next spring at the latest. This will be a public-use IFR facility. Most of the required paperwork (mountains of it) has been submitted and the equipment is on hand. If we receive the airspace approvals from the Federal Aviation Administration in time, we hope to begin initial construction yet this winter.

Another improvement we hope to make by spring of 1973 is the upgrading of the Jordan H-Marker from an 25 watt output to 100 watts. We have always felt that the Jordan H-Marker was one of the most vital stations to navigation in the eastern half of our state and have been both disappointed and frustrated that the siting problems which exist there have reduced the efficiency of this H-Marker so drastically. We expect that replacement of this transmitter with a higher powered unit will solve our problem and better fill the "large black hole" existing in the navigation network in that area. Other H-Marker facilities which are in various stages of planning are at Butte and Forsyth.

Now back to unicom. The Federal Communications Commission which is charged with licensing and regulating all transmitters, transcievers, radio operators, etc. has a habit of making occasional and unannounced inspections to insure compliance with their rules and regulations. When in a generous mood, the inspector discovering any minor violation of FCC regulations will mildly "suggest" that the offending situation be corrected. However, we have no reason to believe that this magnanimity will endure beyond the first offense. Since we have been informed that on a recent FCC inspection trip some of our unicom stations were found in violation of various rules, we offer

the following reminders to all of our unicom operators:

1. All persons operating the unicom must have a **RESTRICTED RADIO TELEPHONE OPERATOR PERMIT** issued by the FCC.

2. The FCC Station License must be displayed near the transmitter at all times.

3. A log must be maintained of all unicom transmissions. These log forms, incidentally, are available upon request through the Division of Aeronautics.

4. The unicom should be attended during the day light hours.

5. Measures must be taken to assure that unauthorized (unlicensed) persons do not have access to the unicom.

One final thought on the subject of unicom concerns their availability for use. In our travels throughout the state, we occasionally encounter radios which are sitting on the shelf, turned off, covered with dust and not doing anyone any good. The aviation fuel tax monies which the Division of Aeronautics has invested in these unicom can only be justified if they are turned on and available for use by the flying public.

We hope that the foregoing has given you an understanding of what at least one part of the Division of Aeronautics has been doing recently and also what we hope to do in the near future. More than that we hope that we have stimulated your thoughts and interest enough that you will give us your ideas about what we have been doing; what we should do and how we might better serve the navigation needs of the Montana flying public.

If you have a question about any part of the foregoing or are interested in more information on our H-Marker or unicom programs please let us know.

The federal government is cracking down on community development around airports by withholding funds for housing loans if it considers complaints about noise are likely.

HOW A PILOT CAN GET THE MOST FROM A WEATHER BRIEFING

By JACK B. HUGHES
Quality Control Officer
Weather Service Forecast Office
Great Falls

This is the first of three articles that will cover several items that are considered to be essential ingredients of any complete weather briefing. The following is a checklist that Weather Service and Flight Service personnel use as a guide to provide a pilot briefing. The list provides sufficient weather information for the pilot or aircrew to make a sound flight decision and/or efficiently execute the flight plan.

1. Background Information
2. Weather Synopsis
3. Hazardous Weather
4. Current Weather
5. Forecast Weather
6. Alternate Routes
7. Forecast Winds Aloft
8. Request for Pilot Reports.

There are two items that should be noted:

1. The content of a weather briefing and order of presentation depends on weather conditions and on Pilot and aircraft capabilities.

2. Weather Service and Flight Service personnel record all their pilot briefings on a "Pilot Briefing Log." The two main purposes of this log is to serve as a reference in aircraft incidents and accident investigations and it enables the briefer to gain some "Background Information" from the pilot. It is this "Background Information" that will be discussed in this issue.

The best way to start is by asking you, the pilot, How do you ask for a weather briefing? The success and satisfaction of any weather briefing will depend on the completeness and clarity of the initial request. When you ask for a briefing, do you begin by asking "How is the weather North?" "What is the weather like?" "Can I go to Billings today?" "Is the weather good at Helena this afternoon?" Or do you use other broadly phrased questions? If you do, it is

almost a sure bet that the briefer will ask, "How far north are you going?" "Are you flying or driving?" "When are you leaving?" As this pump-priming conversation wastes time and irritates some pilots, the briefer possibly may be reluctant to use it. The alternative might not be good, for the briefer may respond to your abbreviated question with a broad statement about the weather and you may wind up taking off with inadequate information.

The difficulties, evident and implied, in the above procedure can be avoided if your opening request can be phrased in the following or similar manner: "I want to check the weather for a direct VFR flight to Glasgow. I intend to leave here about 6 o'clock with time enroute approximately 2 hours. Type aircraft, Comanche N6666T, and current thinking is for flight at 7,500 feet." You have then provided the briefer with all the information needed to give you a concise and complete weather briefing. Actually, the briefer should adapt his briefing to the operational need of each particular flight, whether it be a student going on a local flight or a pilot flying instruments cross country.

Another way of looking at it: The Weather Briefer is normally prepared to service flights within a radius of 100 to 1,000 miles of his terminal. So, when you call or walk into the Weather Office or Flight Service Station, the briefer should have complete background information before he can give you a proper weather briefing.

AVIATION COMMENTS

The following column is the first in what we hope will be a continuing series in **Montana and the Sky**. Aviation Comments will be made up solely of contributions from readers of the newsletter. We will ask only that the contributions be typewritten; deal with aviation or aviation-related topics; include the writers name and address. We reserve the right to edit

for space all contributions.

"121.5 M Hz IS NOT ALWAYS GOOD FOR EMERGENCIES."

By STEVE GRAHAM
Gen. Mgr. KPWD-FM
Plentywood, Montana

One of the first things that a pilot is taught is that in case of emergency, transmit the emergency on 121.5 M Hz since that channel is monitored by all FAA stations. A fact that many pilots are not aware of is that in many areas of Montana, a pilot in trouble can call for help on 121.5 and **Nobody** will hear him.

An example of this is extreme northeastern Montana. In this area we routinely communicate with Flight Service Stations via remoted facilities. Minot FSS is reached via Williston remoted site and Miles City FSS can be reached through remoted sites in Glasgow or Glendive. In addition, ARTCC Great Falls has a remoted site in Glasgow. The catch is that these remoted sites do **not** have transmit or receive capability on 121.5 M Hz. Neither do the Air Force radar stations at Opheim or Fortuna, N. D. continuously monitor the aviation channels. It is easy to make the assumption that since all FAA stations monitor 121.5 that they also do so over remoted facilities. Calls to Miles City FSS and Great Falls ARTCC have revealed that this is clearly not the case. Unless a pilot is within radio range of an FSS or Control Tower either FAA or Military, 121.5 should be rejected as an emergency channel. In Montana, for example, this would mean that 121.5 would be of no use in the entire northeastern part of the state. Given this situation, it would appear that the wise pilot will keep a ready reference of LRCO frequencies handy.

The National Association of State Aviation Officials was organized in 1931 to help develop Aviation as a transportation mode, as an industry, and as an arm of the national defense. Its membership includes the Aviation Agencies of 46 states and the Commonwealth of Puerto Rico.

SAFE APPROACH



By **JACK WILSON**
Chief
Safety and Compliance

As most of you no doubt know, on October the 23rd a Cessna 182 on a flight from Ogden, Utah to Havre, Montana became overdue. Since that time there has been a full-scale, wide-spread search to find the whereabouts of this aircraft and its two occupants. The weather during the period that the aircraft was flying Ogden to Havre was very low ceiling, rain, snow and low visibility. The last known contact with the pilot was at 1628 MST on the afternoon of 23 October. At that time he reported 20 miles southwest of Bozeman. Since that time there has been no contact with the aircraft.

One method of finding lost aircraft under these circumstances is by sightings or soundings from people on the ground in the various valleys along the route and adjacent to the intended flight path of the aircraft. You are also probably aware that this was the beginning of hunting season throughout Montana, so there were quite a few hunters already out in the hills preparing to hunt. To date, we have received no information from any hunters of any soundings or sighting that we have not been able to check out.

This brings us to the matter at hand, which is, a request for the pilots of Montana and/or any other pilots who are passing through to come fourth and volunteer information during the time that a search is in progress. In other words, there were all sorts of reported aircraft sightings or hearing aircraft throughout that day in various places all along the route and off to the sides of it in all directions. It would make

the jobs of the search coordinators and the people checking out these leads much easier if pilots flying during the period of that flight would call, write or come in person and report their route of flight and what time they might have been at any particular place during that period.

I can assure you that information, if given to any of the search coordinators or myself, would be treated strictly as privileged information and would never be passed on in any form or manner to any other organization. This procedure if followed would make the conduct of a search a much more orderly and routine procedure and would alleviate a lot of wasted effort in checking out all of the various leads and sightings.

I am requesting all pilots of Montana to give some thought to this matter and to contact me in person if they require additional information. I would like for the Montana Pilots' Association on a state level to present a resolution condoning this procedure at their next convention. I feel that if taken, this action would very likely sooner or later, save lives that might very well be lost through delays in checking out leads which have no consequence or bearing at all to the search.

HOSPITAL HELIPORTS

The concept of helicopter transportation of medical emergencies, tried and proven on the battlefields of Viet Nam, is being further proven each day in our country and our state on the civilian battlefields of the highway, the mountain top, etc. Ironically, people still suffer and die needlessly because of excessive time taken in getting them to competent medical help by ground transportation.

In an effort aimed at contributing to the solution of the transportation problem, and at the same time promote aviation through the use of the helicopter ambulance, the Montana Aeronautics Commission in 1966 instituted the nation's first hospital heliport program with an offer to design

and construct an emergency heliport at any requesting hospital in Montana which could justify the existence of such a facility. Three heliports were completed in the state before we were forced into a more austere budget. The drastic reduction in income experienced by the Commission at the closure of Glasgow Air Force Base forced a modification of the original terms of our program which now provides for technical and engineering assistance only with the hospital footing the bill for actual construction.

In 1966 and for a period of time thereafter, we were often treated with "curious disbelief" at the mention of our heliport program because it was admittedly a very new idea, particularly in the Montana area. However, the helicopter ambulance has become comparatively commonplace and interest in hospital heliports has increased noticeably. To date, hospital heliports have been constructed either with state funds or hospital funds at Kalispell, Great Falls, Missoula, Cut Bank, Deer Lodge and Galen. In addition, Bozeman, Helena, Whitefish, Hamilton, Havre, Plains and Superior have either expressed an interest in a hospital heliport or have one in the planning stages.

The most recently completed hospital heliport in the state is at Montana Deaconess Hospital in Great Falls which was officially dedicated in ceremonies on the 20th of July, 1972. The Deaconess facility is an attractive addition to the hospital grounds with a 40-foot square concrete touch-down pad in the center of a 100 foot by 100 foot turfed area. It is complete with wind indicator, heliport perimeter lights, flood lights to facilitate loading and unloading operations, concrete stretch-erway and underground sprinkler system. It was constructed with hospital funds, Division of Aeronautics engineering help, and will provide an established and safe landing area for the transportation of medical

(Continued on Page 6)

(Continued from Page 5)

emergencies, personnel and supplies in the Great Falls area.

The Montana Aeronautics Division again congratulates the Montana Deaconess Hospital administration on its progressive attitudes and public concern in providing this service to Montana citizens.

1972 FLIGHT INSTRUCTOR OF THE YEAR AWARD

The Federal Aviation Administration, AOPA Air Safety Foundation and organizations of the aviation industry are establishing a 1972 Flight Instructor of the Year Award Program. The program is projected to become an annual event.

The Award will give recognition to the flight instructor making outstanding contributions to air safety through flight instructing practices. The goals of this effort are to recognize the importance of the flight instructor, to maintain a close working relationship between the flight instructor and the Federal Aviation Administration and to emphasize the professionalism of the flight instructor in this vital safety role.

The Awards will be made in the following categories:

District Award—Eighty-six District Awards will be made at the local level, one in each of the General Aviation District Offices (GADO) and Flight Standards Office (FSDO). District winners become competitively eligible for FAA regional awards.

The District Award will be an FAA certificate with the Department of Transportation seal and citation, signed by the Chief of the GADO/FSDO. In addition, each local winner will receive a lifetime metalized replica, wallet size, of his FAA flight instructor certificate.

These local awards will be presented in ceremonies scheduled by the local GADO/FSDO Chief on or after 15 March 1973.

Regional Award—Twelve Regional awards will be made consisting of one award in each of the following regions: 1. Eastern, 2. Southern (in-

cludes Puerto Rico and the Virgin Islands), 3. Southwest, 4. Central, 5. Western, 6. Pacific (includes Asia, Guam, South Pacific), 7. Alaskan, 8. New England, 9. Great Lakes, 10. Northwest, 11. Rocky Mountain, 12. European (includes Africa and Middle East). The regional winners are competitively eligible for the national award.

The Regional Award will be a metal plaque engraved with the Department of Transportation seal and citation, signed by the regional director.

These awards will be presented in ceremonies scheduled by the FAA regional offices on or after 15 April 1973.

National Award—There will be one national winner selected from the regional winners.

The National award will be presented in Washington, D. C. Travel costs for the national winner and the winner's immediate family will be paid by the AOPA Air Safety Foundation.

This award will be a trophy created for the FAA engraved with the Department of Transportation seal and citation. In addition, the AOPA Air Safety Foundation will present the national winner with a one thousand dollar (\$1,000) cash honorarium. The national winner will be selected in April 1973 and the award will be made sometime during the first six months of 1973.

To be eligible an entrant must be working as an active flight instructor and hold a valid and current FAA Flight Instructor Certificate. An active flight instructor is defined as one that has trained ten successful students in the last two years up to the date the entry was submitted. A successful student is defined as one who has received his required instruction and/or recommendation from the flight instructor concerned, and has successfully passed his written or flight test for pilot certification on the first attempt.

Screening and selection of entries for district and regional awards are made by committees composed of FAA personnel and members of the

aviation community possessing the technical qualification required to evaluate and judge the entrant's capabilities as a flight instructor. Committee members are selected from within the geographic boundaries of the particular area. In the District competition, the Accident Prevention Specialist will serve as chairman. The Regional Accident Prevention Coordinator will act as chairman of the committee in the Regional competition. Final screening and selection for the national awards are made by a committee composed of nationally prominent aviation people and FAA personnel. The chairman of this committee will be the Special Assistant (General Aviation Accident Prevention) to the Director of Flight Standards.

For complete information on the contest get in touch with your Accident Prevention Specialist at your local GADO office.

FIRE CHIEFS ASSOCIATIONS

The Division of Aeronautics will now be represented in the Montana State Fire Chiefs Association and in the International Fire Chiefs Association.

As airport fire protection becomes a reality on the nation's air carrier airports next May, and probably will be extended to other airports in the near future, it is essential that the airports and the fire departments understand each other's problems and goals to achieve a mutual agreement in providing the best fire protection, training and equipment for these airports.

Gerald C. Burrows with his background in crash fire rescue training has been accepted into these two associations and will work to correlate the efforts of the airports and the fire departments.

More than 42,000 operations were handled during the 1971 Experimental Aircraft Association's Fly-In by the FAA controllers at Oshkosh.

FAA INSPECTOR'S CORNER



By DALE UPPINGHOUSE
Accident Prevention Specialist
GADO No. 1, Billings

MODERN ENGINE OPERATION

INITIAL CLIMB

Have you noticed the number of pilots who pull the power back immediately as the wheels leave the ground? They usually establish an immediate flat cruise climb. When asked about this, they will say that they are "saving their engine." Let's consider what is going on here.

The engine manufacturer has installed an enrichment feature in the carburetor. When the engine is developing full power, enrichment jets or valves cut in and provide additional fuel for cooling. If the pilot pulls the throttle back slightly, the mixture is leaned out without touching the mixture control. The pilot is defeating his purpose by pulling that power back too soon.

Why not use this enrichment feature to keep that engine cool? Why not climb at full throttle and at best rate-of-climb speed to a point where an emergency landing can be accomplished? After that point has been reached, and only then, a cruise climb should be established. The same principles apply with fuel injected engines.

CRUISE CLIMB SEGMENT

What about the cruise climb? Now we have a slightly different situation. This segment of the climb will take some time. The best rate of climb may well be too slow for adequate cooling. Cruise climb speeds should be high as consistent with a suitable rate of climb. Extended low speed climb-out coupled with lean fuel mixtures creates undesirable temperature conditions, which may lead to

cylinder scoring, stuck and broken rings.

Will an engine receive more wear in a quick climb to altitude or a long slow cruise climb? The engine manufacturers agree that there is less piston travel and consequently less wear by getting right up there. Just so the temperatures stay in the proper range.

Let's consider this example. Suppose it takes 5 minutes to climb 2500 feet at full throttle and 2600 RPM; $2600 \times 5 = 13,000$ revolutions. We decide to "save" that engine and climb at 2400 RPM, let's say, this takes 7 minutes to climb 2500 feet; $7 \times 2400 = 16,800$ revolutions. That's considerable more piston travel and wear, isn't it?

CRUISE

Does RPM or manifold pressure govern fuel consumption? Granted, both have an effect; but which affects fuel consumption the most?

Let's imagine for a minute that the engine is an air pump. It is pumping air through itself, isn't it? Every two revolutions for instance, an 0-470 will pump approximately 470 cubic inches of air through itself at full throttle. If the RPM is increased, it pumps that much more air. We add fuel to this air at approximately 14 parts air to 1 part fuel by weight. This mixture varies with the mixture setting, but it can't vary much or the engine won't run.

The throttle will vary the pressure, but the number of turns the engine makes is really the governing factor in how much air goes through. With a constant fuel/air ratio then, RPM is the single largest factor in fuel consumption.

The engine should be run according to the manufacturer's recommendations. If the manufacturer gives a number of combinations and you are interested in lower fuel consumption, consider a combination with a lower RPM. Anytime the fuel supply threatens to become a problem, check that RPM.

DESCENT

Surprisingly, many engines receive

their worst treatment during descent. High RPM and low manifold pressure with little or no load on the engine is very hard on connecting rod bearings.

Fast throttle movements also cause quick temperature changes in localized areas within the engine. This is especially true during cold weather.

Some of the early radial engines would throw the heads off when the throttle was closed suddenly. It doesn't do a modern engine any good either.

Doesn't it make sense to throttle back slowly and pull that RPM down to the bottom of the green during the cruise/descent?

Today's aircraft have tightly cowed, high performance engines and controllable pitch propellers. They are fine pieces of machinery. It is relatively simple, however, to damage them by misunderstanding, forgetfulness, or poor operating techniques.

MURPHY NEW NASAO PRESIDENT

Osage Beach, Mo., October, 1972

—Charles Murphy, Director of the Texas Aeronautics Commission, was elected this month to serve as President of the National Association of State Aviation Officials for 1972-73. He succeeds Joseph R. Crotti, Director of the California Department of Aeronautics, effective October 12. The voting took place during NASAO's 41st Annual Conference at Osage Beach, Lake of the Ozarks, Missouri.

National Officers elected to serve with Murphy are Grover Jones, Florida, 1st Vice President; Allan F. Landolt, Illinois, 2nd Vice President; and Kenneth A. Rowe, Virginia, Treasurer. John A. Nammack will continue to serve as Executive Vice President of the Association.

NASAO's Regional Vice Presidents for the coming year are John H. Bennett, Georgia; William E. Hunt, Montana; Fritz E. Wolf, Wisconsin; Keith W. Lutz, Oklahoma; John A. Owens, Missouri; William E. Richards, West Virginia; Albert R. Tavani, Rhode Island; and James Vercellino,

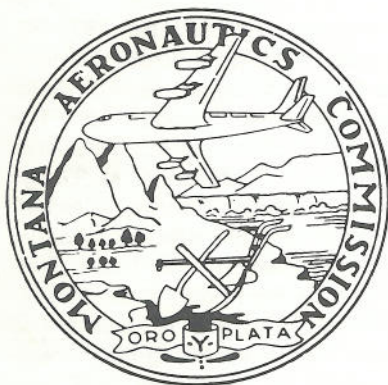
MEMBER

NATIONAL ASSOCIATION OF STATE AVIATION OFFICIALS

PURPOSE:—"To foster aviation, as an industry, as a mode of transportation for persons and property and as an arm of the national defense; to join with the Federal Government and other groups in **research, development, and advancement of aviation**; to develop uniform laws and regulations; and to otherwise encourage co-operation and mutual aid among the several states."

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DECEMBER, 1972